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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SIDDIQI, MOHAMMAD A

ART UNIT PAPER NUMBER

2154

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/924,242

Applicant(s)

LITTLE ET AL

Examiner

Mohammad A Siddiqi

Art Unit

2154

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-26 are presented for examination.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curry et al. (6,032,248) (hereinafter Curry) in view of Stan Liao et al. (Code Optimization Techniques for Embedded DSP Microprocessors, by Stan Liao, Srinivas Devdas, Kurt Keutzer, Steve Tjiang, and Albert Wang, January 1995, Proceedings of the 32nd ACM/IEEE conference on design automation) (hereinafter Liao).
3. As per claim 1, Curry discloses a microcontroller, said microcontroller comprising (col 5, lines 22-27):

two data pointers, each data pointer pointing to a data memory location (col 9, lines 5-10); and

a microcontroller core being capable manipulating data memory by using special flag bit (pointer holds the address of the data, col 9, lines 5-30 and col 6, lines 9-20); enable bit (col 9, lines 14-15), upon execution of a data pointer related instruction (MOVX, col 9, lines 5-30)

Curry did not expressly teach the controlling of automatically incrementing/decrementing a selected data pointers based upon a value of an automatic increment/decrement (AID).

Liao discloses controlling the controlling of automatically incrementing/decrementing a selected data pointers based upon a value of an automatic increment/decrement (AID) (fig 1, page 1- 2, Section II). It would have been obvious to one of ordinary skill in the data processing art at the time invention to combine the teachings of Curry and Liao. The motivation would have been providing efficient and flexible use of memory in 8-bit microcontroller.

4. As per claim 2, Curry discloses the data pointer related instruction is a data move instruction (MOVX, col 9, lines 16-19).

5. As per claim 3, the claim is rejected for the same reasons as claim 1, above.

6. As per claim 4, the claim is rejected for the same reasons as claim 1, above. In addition, Liao discloses wherein the microcontroller core automatically increments/decrements the selected one of the two data pointers when the AID enable bit is at a first logic value and does not automatically increment/decrement the selected one of the two data pointers when the AID enable bit is at a second logic value (page 3 and page 6) section VII).

7. As per claim 5, the claim is rejected for the same reasons as claim 1, above. In addition, Curry discloses microcontroller core further comprises an Arithmetic Logic Unit (ALU) (col 5, lines 21-30).

8. As per claim 6, Curry discloses a microwave oven, a refrigerator, a television, a radio, a VCR, a stereos, a laser printer, a modem, a disk drive, an automotive engine controller, an automotive engine diagnosticator, and a climate controller (col 1, lines 14-24).

9. As per claim 7, the claim is rejected for the same reasons as claim 1, above. In addition Curry discloses, selecting a data pointer from two data pointers (col 9, lines 14-30); determining a value of a bit in a data pointer select register (col 9, lines 14-21); and automatically altering the value in the data pointer, based upon the value of the bit in the data pointer select register (col 9, lines 5-30 and col 11, lines 9-25).

10. As per claim 8, the claim is rejected for the same reasons as claim 1, above. In addition, Curry discloses determining whether an instruction is a data pointer related instruction, wherein the step of automatically altering the value in the data pointer is further based upon the determination that the instruction is a data pointer related instruction (MOVX, col 9, lines 5-30).

11. As per claim 9, the claim is rejected for the same reasons as claim 1, above. In addition, Liao discloses wherein the step of automatically altering the value in the data pointer comprises automatically incrementing the data pointer (register allocation, page 1- 2, Section II and page 3, Section IV).

12. As per claim 10, the claim is rejected for the same reasons as claim 9, above.

13. As per claims 11 and 12, claims are rejected for the same reasons as claim 1 and 9, above.

14. As per claim 13, the claim is rejected for the same reasons as claim 1, above.

15. As per claim 14, Liao discloses the register is a data pointer select register within a special function register (fig 1, page 1-2, section II).

16. As per claim 15, the claim is rejected for the same reasons as claims 1-4, above.

17. As per claim 16, the claim is rejected for the same reasons as claims 1-4, above.

18. As per claim 17, the claim is rejected for the same reasons as claims 1-4, above.

19. As per claim 18, the claim is rejected for the same reasons as claim 7 above, first executing of a predetermined instruction, whereby the step of first executing does not cause a data pointer value to be modified based on a first value of a given indicator; changing the given indicator to a second

value; second executing of the predetermined instruction, whereby the step of second executing does cause the data pointer value to be modified based on the second value of the given indicator (pages 1-2, and page 4, Dsp Microprocessor Architecture, branch-and-bound).

20. As per claims 19-22, claims are rejected for the same reasons as claims 1-4, above.

21. As per claim 23, the claim is rejected for the same reason as claim 7, above. In addition, Liao discloses the circuitry is configured such that execution of a specific instruction of the plurality of instructions results in the at least one data pointer being at least one of incremented and decremented when the at least one indicator comprises a first value of the at least two values and such that execution of the specific instruction of the plurality of instructions does not result in the at least one data pointer being either incremented or decremented when the at least one indicator comprises a second value of the at least two values (pages 4 and 6, section VII, efficient use).

22. As per claim 24, Curry discloses the apparatus comprises a microcontroller (col 1, lines 14-25 and col 5, lines 21-25).

23. As per claim 25, Curry discloses the apparatus comprises an electronic device that includes at least one microcontroller (col 1, lines 14-25 and col 5, lines 21-25).

24. As per claim 26, Curry discloses the specific instruction comprises a memory move instruction (col 1, lines 14-25 and col 5, lines 21-25).

Conclusion

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent 5,426,769 teaches aut-increment/decrement in microcontroller.

U.S. Patent 6,076,156

U.S. patent 5,504,903

U.S. Patent 5,737,548

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad A Siddiqi whose

telephone number is (571) 272-3976. The examiner can normally be reached on Monday -Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John A Follansbee can be reached on (571) 272-3964. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAS


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